The Marches Sector Skills Deep Dive -

Agri-tech

Final Report July 2020

Contents

1. Sector Context

The agri-tech sector accounts for 4.6% of total GVA which equates to a value of £694m in the Marches. With 3.7% of total jobs arising from the agri-tech sector, this equates to 10,730 jobs. While 17.5% of all establishments in the Marches are in the agri-tech sector which is a total of 6,270 establishments. The proportion of the total GVA, jobs and establishments is significantly higher than the national base, emphasising the importance of this industry to the Marches economy.

The agri-tech sector plays an essential role in the Marches economy, and much of the work going on across the Marches in this sector is both pioneering and world-leading. Agritech can be defined as technological innovation to improve the efficiency and output of agriculture.

The Marches is home to Harper Adams University in Telford & Wrekin which is the world leader in agri-tech research. The local industrial strategy makes clear that there will be future opportunities for businesses to collaborate with the university in order to engage in new innovative techniques.

The following table displays the GVA, jobs and establishments by the 12 sectors in the Marches.

	GVA (£m)			Jobs			Establishments (Snapshot)		
	2018	**%**	**UK %**	**2018**	**%**	**Eng. %**	**2019**	**%**	**UK %**
Advanced Manufacturing	£2,416m	16.1%	9.7%	32,945	11.4%	8.5%	2,715	7.6%	7.5%
Agri-Tech	**£694m**	**4.6%**	**1.6%**	**10,730**	**3.7%**	**0.7%**	**6,270**	**17.5%**	**4.9%**
Business and Professional Services	£4,367m	29.1%	40.0%	54,320	18.8%	24.7%	9,080	25.4%	35.2%
Construction	£887m	5.9%	6.1%	15,000	5.2%	4.6%	3,595	10.0%	11.1%
Cyber Security and Resilience	£667m	4.4%	5.0%	11,800	4.1%	4.7%	535	1.5%	1.1%
Environmental	£295m	2.0%	2.7%	3,215	1.1%	1.1%	215	0.6%	0.6%
Food & Drink	£576m	3.8%	1.6%	9,250	3.2%	1.3%	205	0.6%	0.4%
Health and Social Care	£1,241m	8.3%	7.8%	40,900	14.1%	12.9%	1,725	4.8%	5.3%
Public Sector Inc. Education	£1,044m	7.0%	6.3%	30,000	10.4%	11.3%	1,670	4.7%	4.4%
Retail	£1,860m	12.4%	10.6%	49,000	16.9%	15.3%	5,705	15.9%	16.3%
Transport and Logistics	£411m	2.7%	4.1%	9,370	3.2%	4.9%	1,100	3.1%	4.0%
Visitor Economy	£553m	3.7%	4.4%	23,100	8.0%	9.9%	2,980	8.3%	9.2%
Total	**£15bn**			**289,630**			**35,795**		

Source: ONS: Regional gross value added, Business Register Employment Survey and UK Business counts, 2019

The latest data for total GVA in the agri-tech sector was £694m in 2018. This sector accounts for 4.6% of the total GVA for the Marches which is above the UK average of 1.6%.
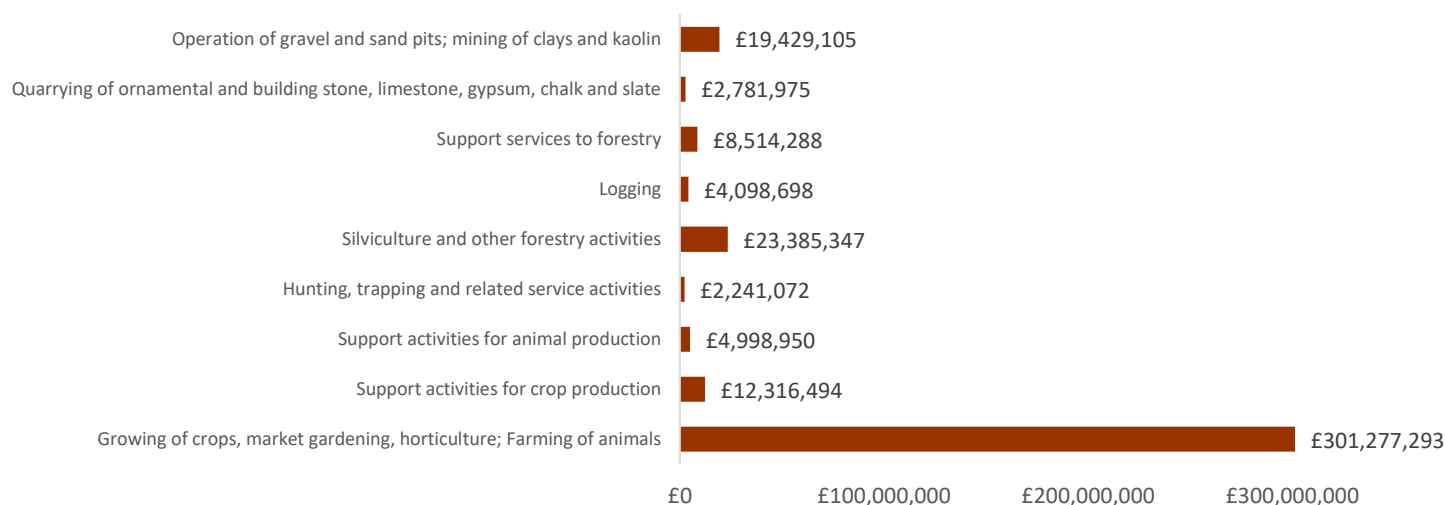
The following table displays the total value of GVA in the Marches.

Sector	The Marches 2017	The Marches 2018	The Marches Change (2017-2018)	The Marches 2018 % of Total	UK 2018 % of Total
Advanced Manufacturing	£2,478m	£2,416m	-£62m	16.1%	9.7%
Agri-Tech	£706m	£694m	-£12m	4.6%	1.6%
Business and Professional Services	£4,169m	£4,367m	£198m	29.1%	40.0%
Construction	£838m	£887m	£49m	5.9%	6.1%
Cyber Security and Resilience	£686m	£667m	-£19m	4.4%	5.0%
Environmental Technologies	£250m	£295m	£45m	2.0%	2.7%
Food & Drink	£573m	£576m	£3m	3.8%	1.6%
Health and Social Care	£1,118m	£1,241m	£123m	8.3%	7.8%
Public Sector Inc. Education	£1,037m	£1,044m	£7m	7.0%	6.3%
Retail	£1,804m	£1,860m	£56m	12.4%	10.6%
Transport and Logistics	£402m	£411m	£9m	2.7%	4.1%
Visitor Economy	£526m	£553m	£27m	3.7%	4.4%
Total	**£14.6bn**	**£15bn**	**£424m**		

Source: ONS: Regional gross value added, 2019

Based on 2015 EMSI GVA modelled data which allows for greater sectoral breakdown the sector contributed £467m in total to the UK economy in 2015[1]. Growing of crops, market gardening, horticulture; farming of animal's accounts for nearly 65% (£301m) of the agri-tech sector[2].

Total GVA by industry in the agri-tech sector

Industry	Value
Operation of gravel and sand pits; mining of clays and kaolin	£19,429,105
Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate	£2,781,975
Support services to forestry	£8,514,288
Logging	£4,098,698
Silviculture and other forestry activities	£23,385,347
Hunting, trapping and related service activities	£2,241,072
Support activities for animal production	£4,998,950
Support activities for crop production	£12,316,494
Growing of crops, market gardening, horticulture; Farming of animals	£301,277,293

Source: EMSI Analytics Tool, 2020

In 2019, there were approximately 6,270 establishments in the agri-tech sector[3], this accounts for 17.5% of the total establishments in the Marches which is significantly above the UK average of 4.9%.

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[1] Please note, due to insufficient data only 9 of the 29 industries have been included in the analysis

[2] EMSI Analytics tool, 2020

[3] ONS: UK Business Counts 2019. Please note, currently the ONS Business Demography dataset does not provide a breakdown by industry for all registered establishments, the breakdown can be obtained from the ONS UK Business Counts which is a snapshot (March 2019) of the Business Demography dataset.

The following table displays the number of establishments in the Marches.

Sector	The Marches 2019	The Marches 2019 % of Total	UK 2019 % of Total
Advanced Manufacturing	2,715	7.6%	7.5%
Agri-Tech	6,270	17.5%	4.9%
Business and Professional Services	9,080	25.4%	35.2%
Construction	3,595	10.0%	11.1%
Cyber Security and Resilience	535	1.5%	1.1%
Environmental Technologies	215	0.6%	0.6%
Food & Drink	205	0.6%	0.4%
Health and Social Care	1,725	4.8%	5.3%
Public Sector Inc. Education	1,670	4.7%	4.4%
Retail	5,705	15.9%	16.3%
Transport and Logistics	1,100	3.1%	4.0%
Visitor Economy	2,980	8.3%	9.2%
Total	**35,795**		

Source: ONS: UK Business Counts, 2019

The available data shows that in 2019, the growing of crops, market gardening, horticulture; farming of animals and the support activities for crop production accounts for over 96% (6,030) of the agri-tech establishments[4].

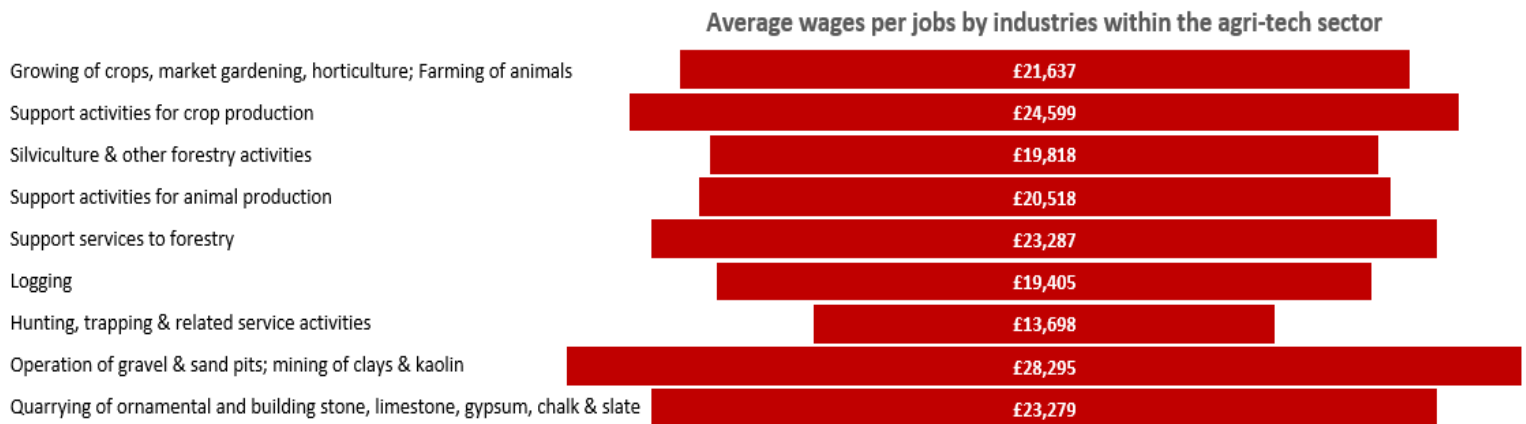| Industry	2019 Establishments
Growing of crops, market gardening, horticulture; Farming of animals	5,830
Support activities for crop production	200
Silviculture and other forestry activities	85
Support activities for animal production	55
Support services to forestry	30
Logging	20
Hunting, trapping and related service activities	15
Operation of gravel and sand pits; mining of clays and kaolin	12
Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate	5
Total	**6,252**

Source: ONS: UK Business Counts, 2019

The overall average wages for the Agri-Tech sector in the Marches is £21,939, with 4 industries above the average. The average wages per job in the operation of gravel and sand pits; mining of clays and kaolin is £28,295[5].

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[4] ONS: UK Business Counts 2019.

[5] EMSI Analytics tool, 2020

The following figure shows the average wages per job across the agri-tech industries.

Average wages per jobs by industries within the agri-tech sector

Industry	Average wage
Growing of crops, market gardening, horticulture; Farming of animals	£21,637
Support activities for crop production	£24,599
Silviculture & other forestry activities	£19,818
Support activities for animal production	£20,518
Support services to forestry	£23,287
Logging	£19,405
Hunting, trapping & related service activities	£13,698
Operation of gravel & sand pits; mining of clays & kaolin	£28,295
Quarrying of ornamental and building stone, limestone, gypsum, chalk & slate	£23,279

Source: EMSI Analytics Tool, 2020

Location Quotients (LQs) are a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region "unique" in comparison to the national average. Higher LQs correspond to higher levels of specialisation, with an LQ above 1 indicating that the area is more specialised in that sector than Great Britain as a whole.

Out of the 9 industries within the Agri-Tech sector, 4 are above 1. Notably, the growing of crops, market gardening, horticulture; farming of animals was 4.84 in 2018[6].

The following table displays LQs for the agri-tech sector in the Marches.

Industry	2018 Location Quotient
Growing of crops, market gardening, horticulture; Farming of animals	4.84
Operation of gravel and sand pits; mining of clays and kaolin	3.32
Silviculture and other forestry activities	1.89
Hunting, trapping and related service activities	1.52
Logging	0.99
Support activities for animal production	0.98
Support services to forestry	0.90
Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate	0.82
Support activities for crop production	0.82

Source: EMSI Analytics Tool, 2020

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[6] EMSI Analytics tool, 2020

2. Supply Side Analysis

2.1 Current Workforce Size[7]

There was an estimated number of 10,730 jobs in the agri-tech sector in 2018. This accounts for 3.7% of the total jobs and above the England total of 0.7%[8].

The following table displays the number of jobs in the Marches in 2018.
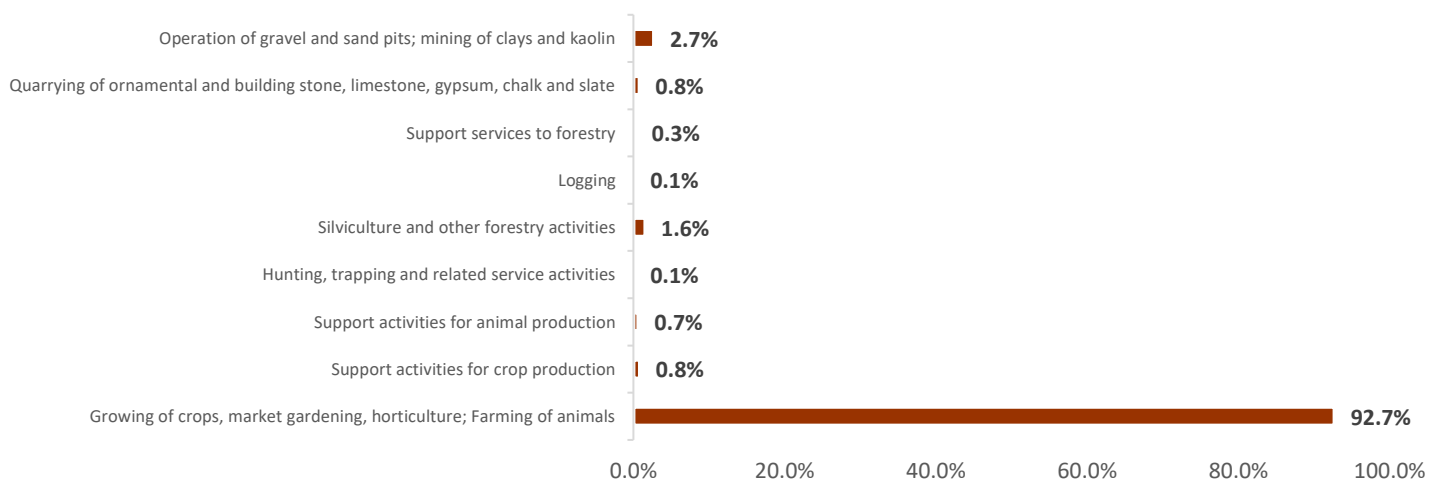
	The Marches 2018	The Marches 2018 % of Total	England 2018 % of Total
Advanced Manufacturing	32,945	11.4%	8.5%
Agri-Tech	**10,730**	**3.7%**	**0.7%**
Business and Professional Services	54,320	18.8%	24.7%
Construction	15,000	5.2%	4.6%
Cyber Security and Resilience	11,800	4.1%	4.7%
Environmental Technologies	3,215	1.1%	1.1%
Food & Drink	9,250	3.2%	1.3%
Health and Social Care			
Public Sector Inc. Education	30,000	10.4%	11.3%
Retail	49,000	16.9%	15.3%
Transport and Logistics	9,370	3.2%	4.9%
Visitor Economy	23,100	8.0%	9.9%
Total	**289,630**		

Source: ONS: Business Register and Employment Survey, 2019

Sector Analysis

EMSI provide a more detailed breakdown of jobs by industry and based on their total of 7,893 jobs in 2018- within the agri-tech sector, nearly 93% (7,320) of jobs are from the growing of crops, market gardening, horticulture; farming of animals.

Proportion of jobs by industry within the agri-tech sector

Source: EMSI Analytics Tool, 2020

Occupation Analysis[9]

Agri-Tech is not an industry or activity that is identified in existing classifications. Indeed, there is no widely accepted definition of what comprises Agri-Tech other than it encompasses a variety of activities that are identified in existing classifications i.e. agriculture, horticulture and farming and fishing trades.

Description	2018 Jobs
Farm workers	3,176
Farmers	1,072
Managers and proprietors in agriculture and horticulture	508
Horticultural trades	455
Fishing and other elementary agriculture occupations n.e.c.	453
Agricultural and fishing trades n.e.c.	222
Managers and proprietors in forestry, fishing and related services	136
Total	**6,022**

Source: EMSI Analytics Tool, 2020

2.2 Existing Training Provision

2.2.1   Apprenticeship Provision

Apprenticeship Starts

The total number of apprenticeships in the Marches (across all sectors) increased to 6,360 from 6,020 in 2018/19 - up 5.5% compared to 4.7% nationally.

The table below identifies the unique apprenticeship starts by area across the Marches LEP for all agri-tech related subjects:

Local Authority	2016/17	2017/18	2018/19	Change 17/18 - 18/19	% Change 17/18 - 18/19
Herefordshire, County of	60	50	40	-10	-20.0%
Shropshire	60	60	50	-10	-16.7%
Telford and Wrekin	10	20	20	0	0.0%
Total	**130**	**130**	**110**	**-20**	**-15.4%**

Source: ESFA Datacube, 2018/19

The number of agri-tech apprenticeships decreased by -15.4% across the Marches in 2018/19 to 110. Analysis by local authority area shows the number of starts in both Herefordshire and Shropshire decreased by -10 apprentices or -20.0% and -16.7% respectively. Telford and Wrekin performed slightly better, recording no change compared to 2017/18 but has fewer apprenticeships overall.

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[9] Occupation and industry classifications categorise occupations and industries into clearly defined groups. As such they provide a common basis for collecting, presenting, and comparing of labour statistics. **Occupational** classifications (SOC) group people based on job and tasks performed whereas **Industry** (SIC) classifications group people based on the sector of economic activity in which they are employed. For the purpose of this work we have attributed occupations to their most natural industrial sector, so for example a 'Financial Accounts Managers' whose skills are transferrable across all sectors will be contained solely within Business and Professional Services**.** Any identified skills gap for this occupation would apply to all sectors**.**

The table below identifies the number of starts by each of the Tier 2 sector subject areas that combine to form the overarching 'Agriculture, Horticulture and Animal Care'.

Sector Subject Area	2016/17	2017/18	2018/19	Change 17/18 - 18/19	% Change 17/18 - 18/19
Agriculture, Horticulture and Animal Care					
Agriculture	60	50	40	-10	-20.0%
Animal Care and Veterinary Science	40	50	50	0	0.0%
Horticulture and Forestry	30	30	20	-10	-33.3%
Total	**130**	**130**	**110**	**-20**	**-15.4%**

Source: ESFA Datacube, 2018/19

When considering apprenticeship starts by sector subject area, the number of apprenticeships fell in both 'Agriculture' (-10) and 'Horticulture and Forestry' (-10). There was no change in the number of apprenticeships starts in 'Animal Care and Veterinary Science'. This is now the largest apprenticeship standard for agri-tech in the Marches.

Apprenticeship Level for Agriculture, Horticulture and Animal Care

- Advanced Apprenticeship
- Intermediate Apprenticeship
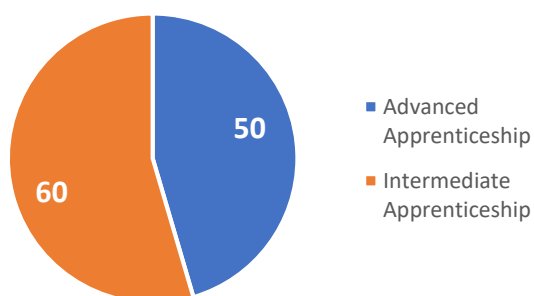
There were no higher-level apprenticeships starts in 'Agriculture, Horticulture and Animal Care' in 2018/19. Following a general trend nationally advanced level starts increased by 0.9% to 45.5%; whilst intermediate starts accounted for 54.5% - down from 55.3% in 2017/18.

Source: ESFA Datacube, 2018/19

In terms of starts by provider, 17 organisations delivered apprenticeships across the Marches in 'Agriculture, Horticulture and Animal Care' in 2018/19. The majority of training was provided by the 10 providers listed below, which accounted for 86% of all provision.

Provider	2016/17	2017/18	2018/19
Herefordshire, Ludlow, and North Shropshire College	20	20	20
Reaseheath College	10	10	20
South Staffordshire College	10	20	20
Poultec Training Limited	20	20	10
Dart Limited	<10	10	10
Haddon Training Limited	<10	10	10
Summerhouse Equestrian and Training Centre LLP	<10	<10	10
Total People Limited	<10	10	<10
Myerscough College	<10	10	<10
Keits Training Services LTD	-	<10	<10

Source: ESFA Datacube, 2018/19

Herefordshire, Ludlow and North Shropshire College remains the largest training provider, indeed the three largest providers are all further education training providers. Poultec Training are the current largest independent training provider. Harper Adams University, with specialisms in agricultural and rural affairs offers Degree Level Apprenticeships.

Apprenticeship Provision

A mapping and gapping exercise of all apprenticeship provision in the Marches has highlighted that there are 6 apprenticeship providers offering apprenticeships in the agri-tech sector within 55 miles of the Marches. This was calculated by using the most central postcode SY8 2AF.

The table in the supporting appendix shows the current apprenticeship training provision for each of the standards associated with the agri-tech sector across the West Midlands: 7 out of the 12 apprenticeship standards associated with the sector are being offered within 55 miles of the Marches. Most provision is held at the training provider, with some courses offering apprenticeships at the employer. A colour coding system was used to map and gap the provision, with a preference for learning at providers taking priority in the colour coding, as some providers offer both onsite and offsite learning, which would be coloured green in the matrix.

In 4 cases there were courses with only one provider offering the course across England, including in 1 case this provision was in the West Midlands.

1 course has no provision anywhere across England: forest operative. There is a distinct lack of choice in provision, as only 12 courses were available at the time of the analysis.

2.2.2   Further and Higher Education Provision

Further and Higher Education providers are significant players in the training marketplace. Their role alongside private training providers is to provide opportunities for both the future and the existing workforce to access relevant training in the health and social care sector.

Specifically, there are the following major further and higher education establishments within the area:

- Herefordshire, Ludlow and North Shropshire College
- Telford College
- Shrewsbury Colleges Group
- Harper Adams University
- University Centre Shrewsbury (University of Chester)
- University of Wolverhampton
- NMITE

Higher Education (HESA)

Harper Adams University specialises in the agricultural and rural sector and has significant agri-tech research and innovation capability, whilst the University of Chester has a centre in Shrewsbury specialising in subjects aligned to medicine and healthcare, business, and education. The University of Wolverhampton has a well- established campus in the Marches, located at Priorslee in Telford, which currently specialises in engineering and University Centre Telford in Southwater which delivers education, marketing and business management.

NMITE is a new higher education institution which will focus on engineering subjects and will add capacity to the development and delivery of agri-tech related subjects.

Qualifications and skills are on a spectrum, with many academic qualifications now having considerable employer input, and many vocational and professional qualifications being delivered by universities. There is an identified need for both detailed subject knowledge and transferable skills to be part of vocational qualifications: 'many formerly purely technical occupations are expected to show a new demand for creative and interpersonal skills' (World Economic Forum, 2016). Health and engineering are examples where such a binary divide becomes unhelpful. Employers will need all of the skills and qualifications along this spectrum, at different times and in different combinations, and learners and employees will need to be able to move along this spectrum and should be supported in doing so.

The table below sets out the number of students studying in these institutions in the academic year 2018/19. The data relates to all campuses not just those based across the Marches.

Sector	Harper Adams	University of Chester	University of Wolverhampton
Advanced Manufacturing	275	345	1,445
Agri-Tech	**4,755**	**1,020**	**2,300**
Business and Professional Services	135	3,020	4,060
Environmental Technologies	20	370	0
Food and Drink	160	0	0
Health and Social Care	25	4,645	4,300
Public Sector Inc. Education	5	2,925	4,655
Construction	0	0	0
Cyber	0	200	0
Transport and Logistics	0	10	0
Visitor Economy	0	1,785	2,295
Retail	0	245	0
Grand Total	**5,375**	**14,565**	**19,045**

Source: HE student enrolments by HE provider and subject of study 2018/19

In 2018/19 there were 4,755 students on courses aligned to agri-tech at Harper Adams, up 40 (+0.8%) since the previous year. These students accounted for 88.5% of the student body.

At the University of Chester there were 1,020 students studying courses in the agri-tech sector, this is up by 115 (+12.7%) since the previous year. These students made up 7.0% of the student body.

The University of Wolverhampton had 2,300 students studying courses in the agri-tech sector, which made up 12.1% of the student body.
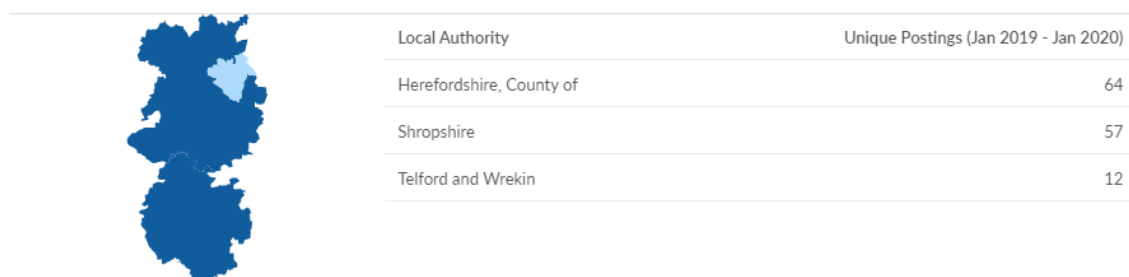
3 Demand Side Analysis

Farming and food production is a global industry that is strategically and economically important. In the UK, farming is the bedrock of the agri-food sector which is worth £122bn to the UK economy and employs more than 4 million people, according to Defra.

Analysis of agritech job vacancies in the last year (January 2019 to January 2020) reveal 421 total job adverts of which 133 were unique vacancies.

The highest demand is in Herefordshire, which account for 48.1% of all unique vacancies, followed by Shropshire (42.9%) and Telford and Wrekin (9.0%).

Job Postings Regional Breakdown

Local Authority	Unique Postings (Jan 2019 - Jan 2020)
Herefordshire, County of	64
Shropshire	57
Telford and Wrekin	12

Source: ESMI Analytics Tool, 2020

The graph below shows the long-term monthly trend for total job adverts for openings in agritech. The number of adverts has increased from 9 in January 2016 to 26 in January 2020.This is an increase of 188.9%.

Monthly Unique Postings
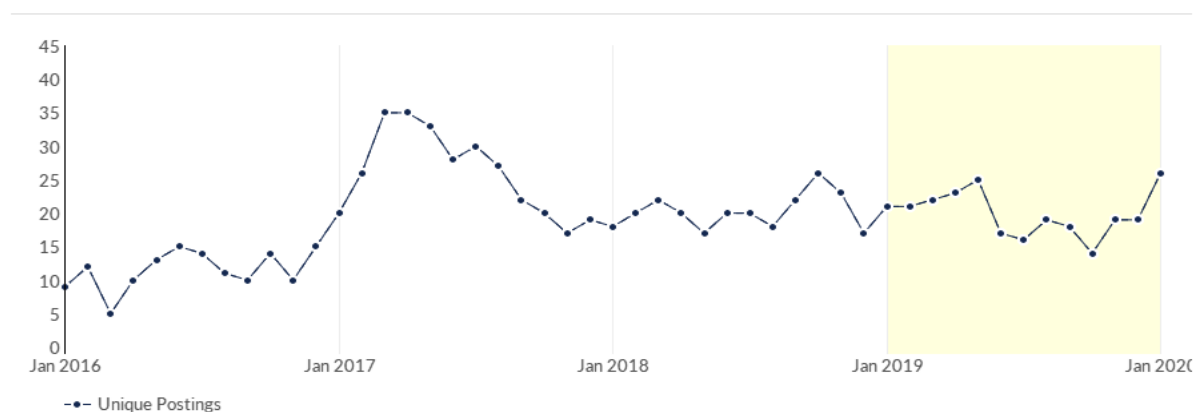
Source: EMSI Analytics Tool, 2020

The top 10 companies looking to recruit to the agritech sector account for 22.6% of all unique vacancies posted in The Marches area.

Top 10 companies looking to recruit

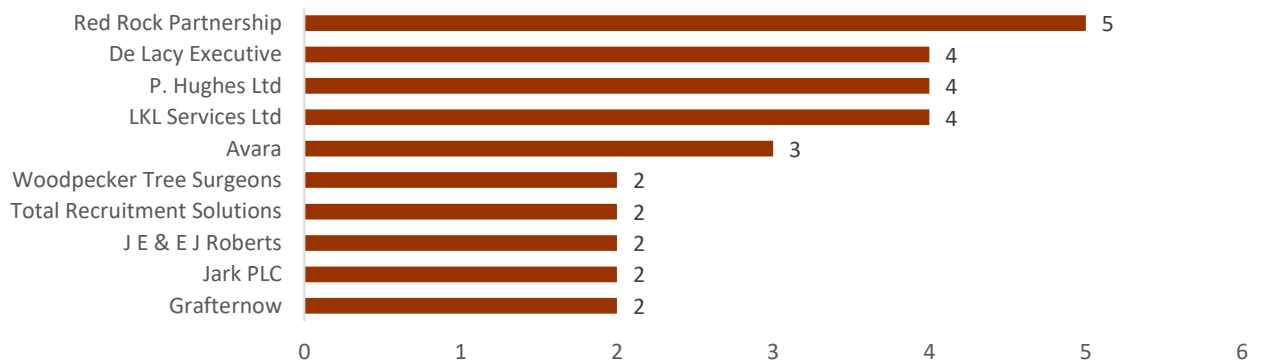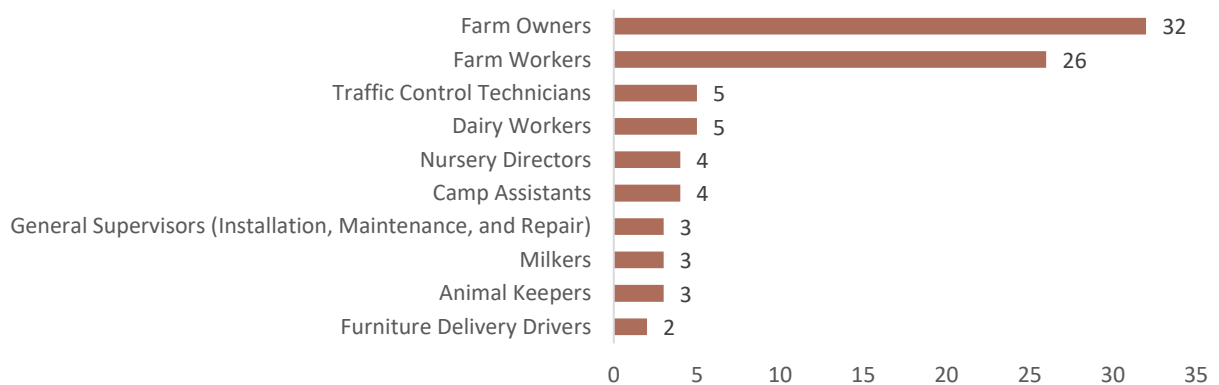| Company	Count
Red Rock Partnership	5
De Lacy Executive	4
P. Hughes Ltd	4
LKL Services Ltd	4
Avara	3
Woodpecker Tree Surgeons	2
Total Recruitment Solutions	2
J E & E J Roberts	2
Jark PLC	2
Grafternow	2

The top two advertised job titles were both associated with farming and equated to 43.6% of all unique vacancies in the agritech sector.

Top 10 job titles employers are looking to hire

Job Title	Count
Farm Owners	32
Farm Workers	26
Traffic Control Technicians	5
Dairy Workers	5
Nursery Directors	4
Camp Assistants	4
General Supervisors (Installation, Maintenance, and Repair)	3
Milkers	3
Animal Keepers	3
Furniture Delivery Drivers	2

The top requested skill was poultry, followed by agriculture and welfare. Combined these three skills appeared in 89 unique postings (66.9%).

Top 10 skills employers are requesting

Skill	Count
Poultry	34
Agriculture	30
Welfare	25
Farming	13
Forestry	12
Animal Husbandry	10
Biosecurity	8
Vaccination	8
Numeracy	5
Manual Handling	5
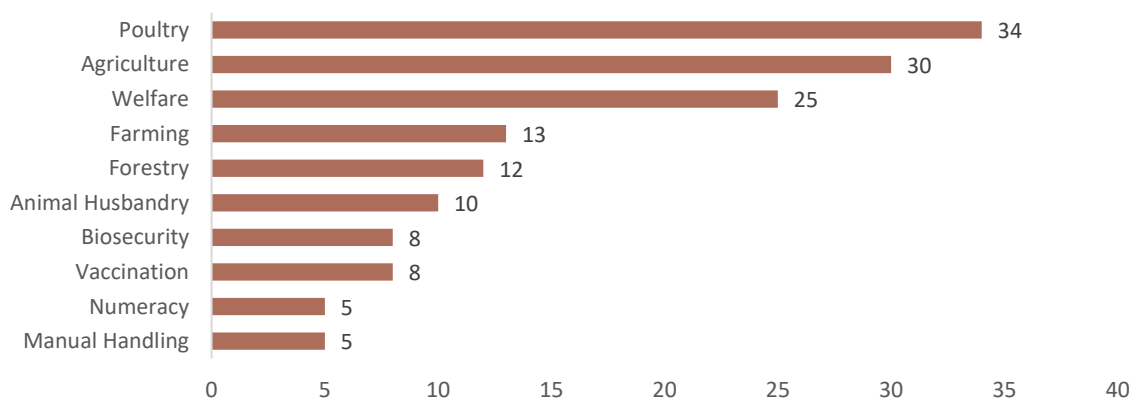
3.1 Occupational Forecasts

In this section of the report we use UKSOC 4-digit 2010 classifications to understand at a granular level the types of occupations and activities required for roles within the agri-tech sector.

Description	2018 Jobs	2022 Jobs	2018 - 2022 % Change	2018 - 2022 Openings	Education Level	Automation Index
Farm workers	3,176	3,148	-1%	467	Level 2 NVQ; GCSE at grades A*-C	64.8%
Farmers	1,072	1,076	0%	256	Level 2 NVQ; GCSE at grades A*-C	36.0%
Managers and proprietors in agriculture and horticulture	508	510	0%	110	Level 3 NVQ; A Levels	37.1%
Horticultural trades	455	441	-3%	104	Level 2 NVQ; GCSE at grades A*-C	37.3%
Fishing and other elementary agriculture occupations n.e.c.	453	430	-5%	64	Level 2 NVQ; GCSE at grades A*-C	68.8%
Agricultural and fishing trades n.e.c.	222	206	-7%	50	Level 2 NVQ; GCSE at grades A*-C	55.5%
Managers and proprietors in forestry, fishing and related services	136	132	-3%	27	Level 3 NVQ; A Levels	37.7%
Total	**6,021**	**5,944**	**-1%**	**1,077**		

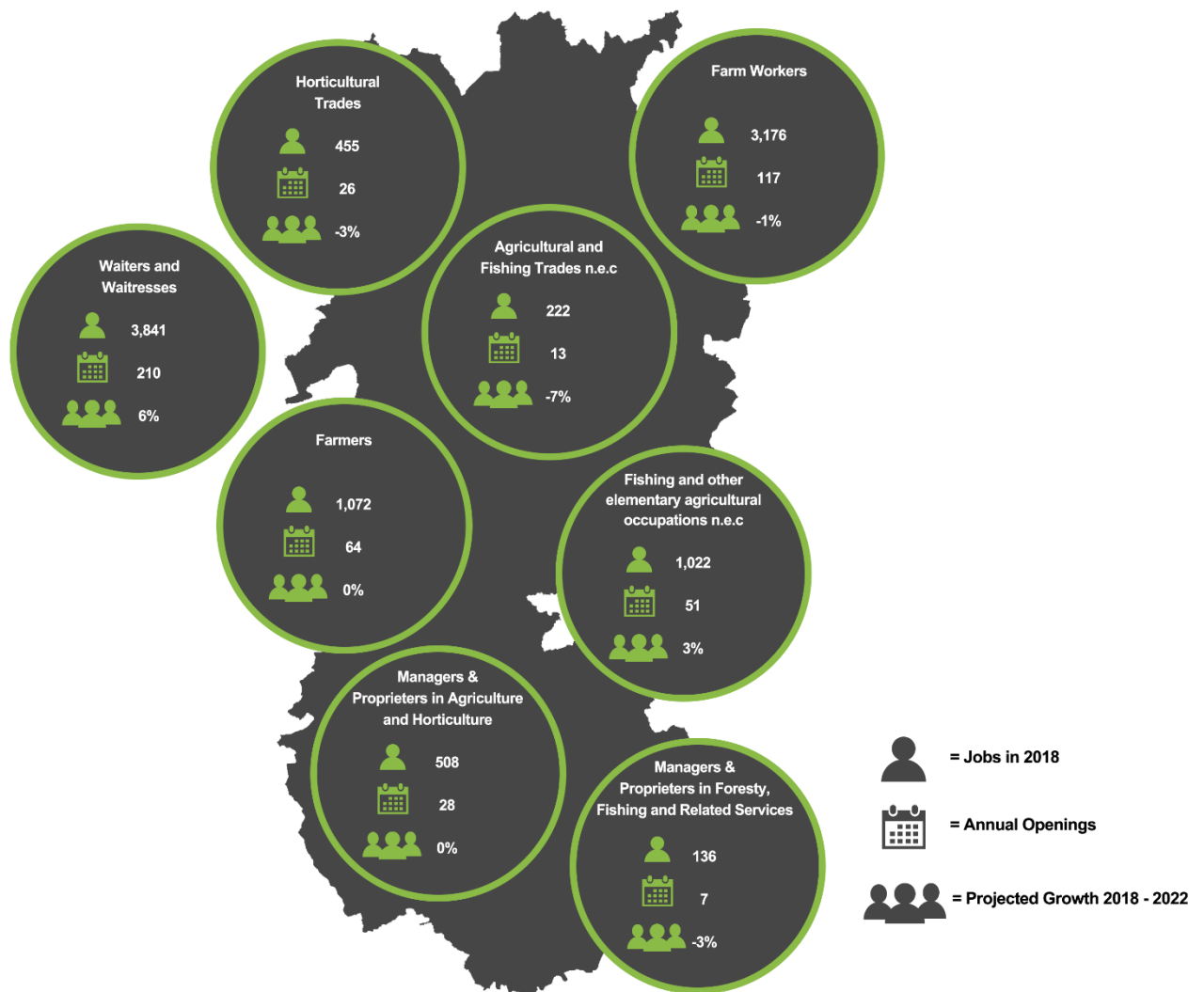*Source: EMSI Analytics Tool, 2020*

In total there are seven occupations associated with the agri-tech sector. The most jobs in the Marches are contained within 'Farm workers', and 'Farmers'. These two occupations account for 70% of all jobs in the sector.

Of the seven occupations listed above, five are expected to contract and two are predicted to undergo nominal change (+/- in absolute numbers).

Of the five occupations forecast to shrink, four employ fewer than 500 people. 'Farm workers' the largest occupational group is expected to contract the most in absolute numbers, -28 jobs or -1%. In percentage terms, jobs in 'Agricultural and fishing trades n.e.c.' are predicted to shrink by the largest margin (-7%).

The Marches Top 10 Agri-Tech Occupations

Horticultural Trades
- 455
- 26
- -3%

Farm Workers
- 3,176
- 117
- -1%

Waiters and Waitresses
- 3,841
- 210
- 6%

Agricultural and Fishing Trades n.e.c
- 222
- 13
- -7%

Farmers
- 1,072
- 64
- 0%

Fishing and other elementary agricultural occupations n.e.c
- 1,022
- 51
- 3%

Managers & Proprieters in Agriculture and Horticulture
- 508
- 28
- 0%

Managers & Proprieters in Foresty, Fishing and Related Services
- 136
- 7
- -3%

Legend:
- = Jobs in 2018
- = Annual Openings
- = Projected Growth 2018 - 2022

3.2 Job Forecasts by Industry

Overall, the agri-tech sector is projected to decrease by approximately 372 jobs by 2022.

Within the agri-tech sector, the operation of gravel and sand pits; mining of clays and kaolin and the quarrying of ornamental and building stone, limestone, gypsum, chalk and slate are projected to overall increase by at least 23 new jobs. The need to automate will drive the importance of the agri-tech sector with a requirement to replace some of the human processes with robotics.

The following table shows 2018 jobs and the projected change by industry within the food and drink sector by 2022.
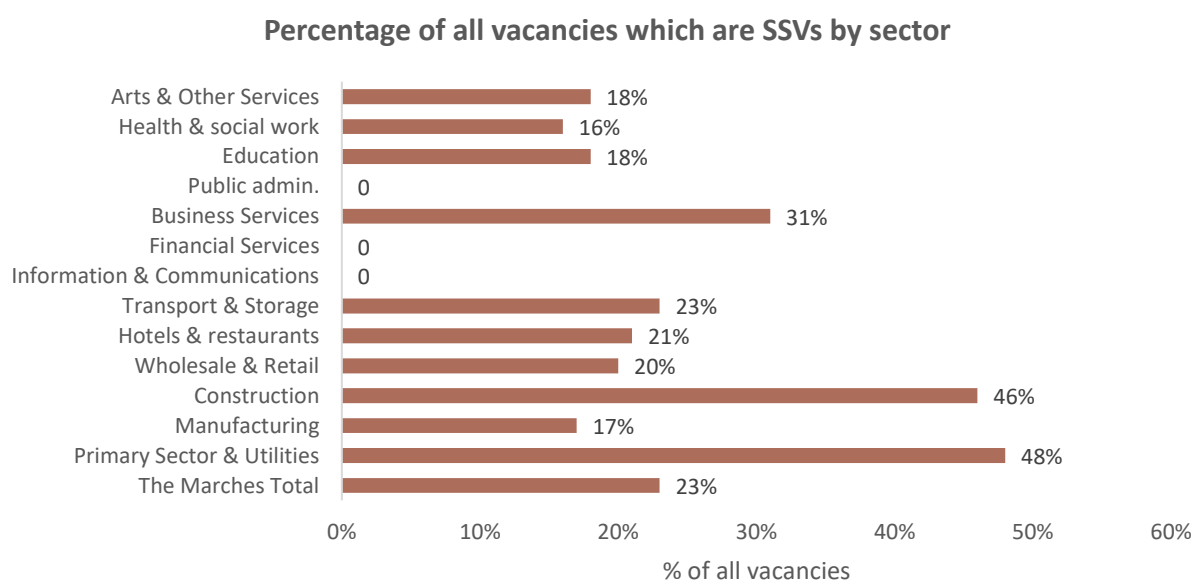
Description	2018 Jobs	2022 Jobs	2018 - 2022 Change
Growing of crops, market gardening, horticulture; Farming of animals	7,320	7,008	-312
Silviculture and other forestry activities	124	101	-23
Support activities for crop production	67	45	-22
Support activities for animal production	53	44	-9
Support services to forestry	26	19	-7
Hunting, trapping and related service activities	12	<10	-
Logging	11	<10	-
Operation of gravel and sand pits; mining of clays and kaolin	216	233	17
Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate	65	71	6
Total	7,893	7,521	-372

Source: EMSI Analytics Tool, 2020

3.3 Sector Skill Shortages

23% of all vacancies are skills shortage vacancies, compared to 22% nationally. The graph below highlights the acute problem of skills shortage vacancies in certain sectors.
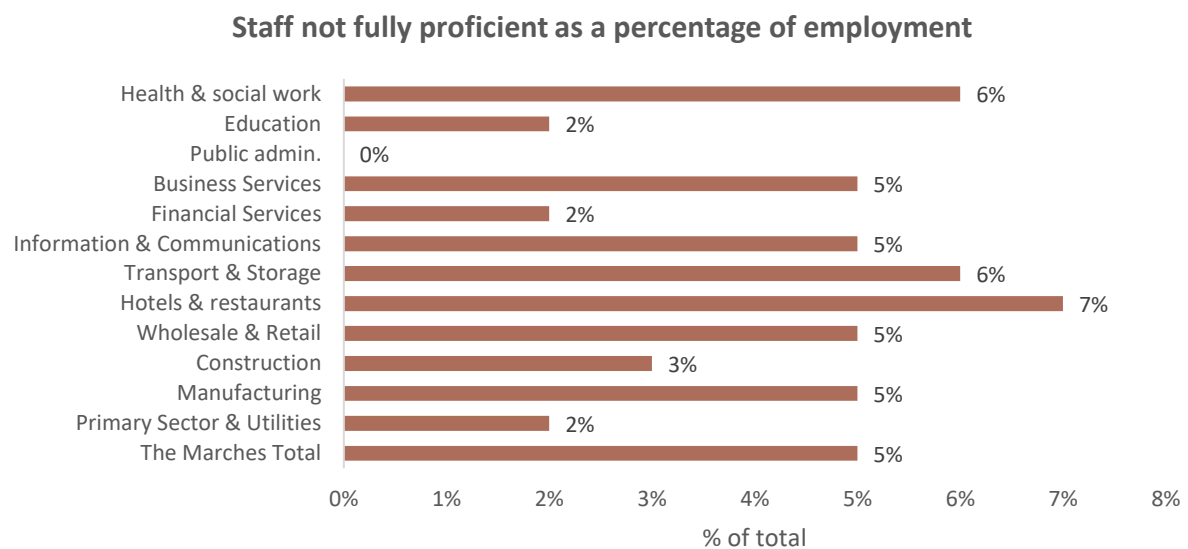
Agri-tech defined in the graph as 'primary sector and utilities' has an acute skills gap at 48%. This will be a problem for employers who are unable to fill vacancies due to the lack of skilled staff and will therefore decrease productivity in this sector whilst vacancies aren't filled. Staff that are recruited may need significant training to equip them with the valuable skills that employers request in this sector.

Percentage of all vacancies which are SSVs by sector

Sector	%
Arts & Other Services	18%
Health & social work	16%
Education	18%
Public admin.	0
Business Services	31%
Financial Services	0
Information & Communications	0
Transport & Storage	23%
Hotels & restaurants	21%
Wholesale & Retail	20%
Construction	46%
Manufacturing	17%
Primary Sector & Utilities	48%
The Marches Total	23%

% of all vacancies

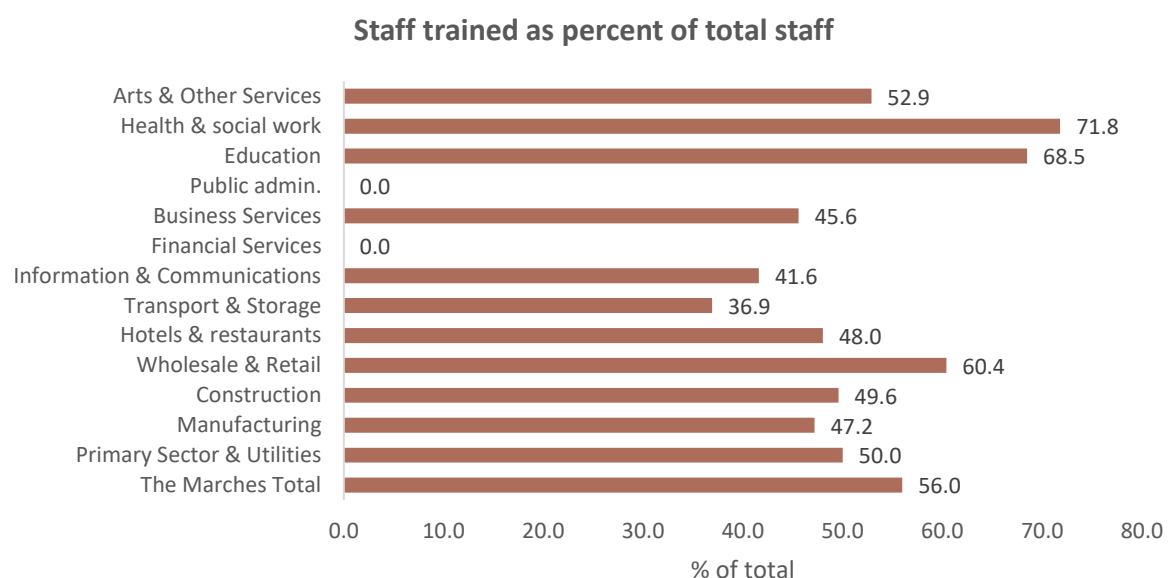*Source: Employer Skills Survey 2017, LEP Summary Tables*

5% of staff are not fully proficient in the Marches, compared to 4% nationally. In the agri-tech sector, 2% of staff are not fully proficient.

This sector does not have a big problem with skill shortages within the current employment base, this may be due to successful hiring of candidates with sufficient skills, or employers investing in training to train up staff who lack vital skills.

Staff not fully proficient as a percentage of employment

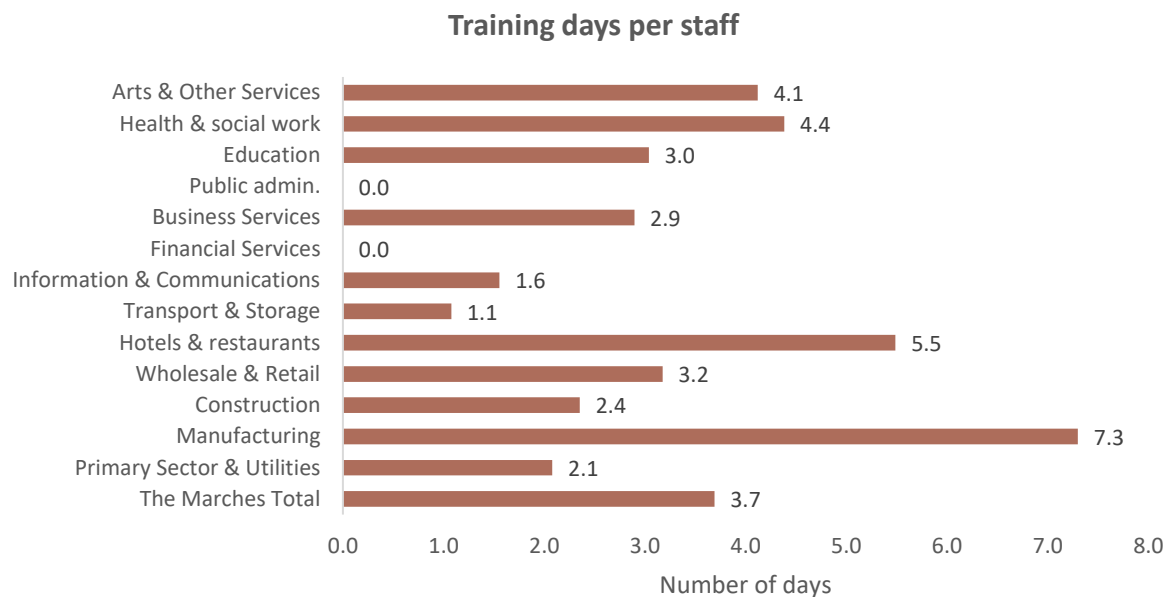| Sector	% of total
Health & social work	6%
Education	2%
Public admin.	0%
Business Services	5%
Financial Services	2%
Information & Communications	5%
Transport & Storage	6%
Hotels & restaurants	7%
Wholesale & Retail	5%
Construction	3%
Manufacturing	5%
Primary Sector & Utilities	2%
The Marches Total	5%

Source: Employer Skills Survey 2017, LEP Summary Tables

In the Marches, 56.0% of staff are trained as a percentage of all staff, compared to 62.2% of staff in England. 50.0% are trained in the agri-tech sector.

Staff trained as percent of total staff

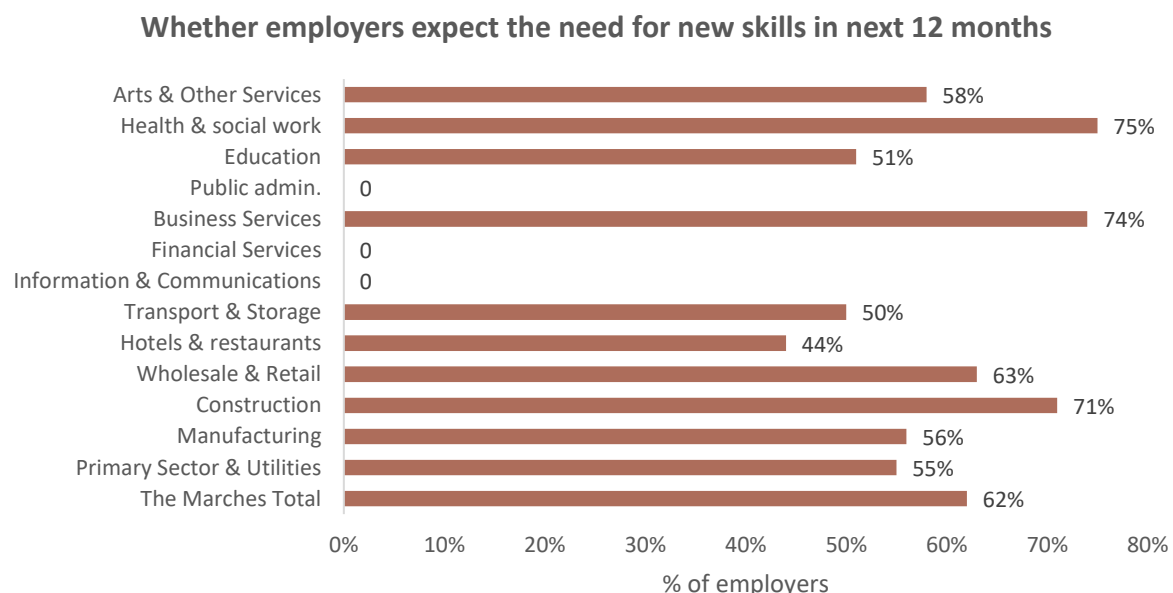| Sector	% of total
Arts & Other Services	52.9
Health & social work	71.8
Education	68.5
Public admin.	0.0
Business Services	45.6
Financial Services	0.0
Information & Communications	41.6
Transport & Storage	36.9
Hotels & restaurants	48.0
Wholesale & Retail	60.4
Construction	49.6
Manufacturing	47.2
Primary Sector & Utilities	50.0
The Marches Total	56.0

Source: Employer Skills Survey 2017, LEP Summary Tables

On average, employees in the Marches have 3.7 training days. In the agri-tech sector this is less at 2.1 training days.

Training days per staff

Sector	Number of days
Arts & Other Services	4.1
Health & social work	4.4
Education	3.0
Public admin.	0.0
Business Services	2.9
Financial Services	0.0
Information & Communications	1.6
Transport & Storage	1.1
Hotels & restaurants	5.5
Wholesale & Retail	3.2
Construction	2.4
Manufacturing	7.3
Primary Sector & Utilities	2.1
The Marches Total	3.7

Source: Employer Skills Survey 2017, LEP Summary Tables

62% of employers in the Marches expect the need for new skills in the next 12 months, this is the same as national levels. In the agri-tech sector 55% of employers expect new skills from employees. Upskilling may be the preferred solution to this problem – that is, training current employees with new skills to ensure they can keep up with a changing work environment e.g. enhancements in digital technology. Upskilling may be cheaper for employers and more attractive, given the high number of skills shortage vacancies and the possibility of adding to these if employers can't 'grow their own'.

Whether employers expect the need for new skills in next 12 months

Sector	% of employers
Arts & Other Services	58%
Health & social work	75%
Education	51%
Public admin.	0
Business Services	74%
Financial Services	0
Information & Communications	0
Transport & Storage	50%
Hotels & restaurants	44%
Wholesale & Retail	63%
Construction	71%
Manufacturing	56%
Primary Sector & Utilities	55%
The Marches Total	62%

Source: Employer Skills Survey 2017, LEP Summary Tables

4 Supply vs Demand

4.1 Provision Review

In this section of 'Supply vs Demand' we will concentrate on the most significant areas of misalignment and gaps across the sector. Identifying which courses are currently over-supplying the labour market, which areas of labour market demand is currently being met and where there might be areas of opportunity for the development of new skill provision. This should be considered alongside the cross over with engineering and IT disciplines.

Discipline	Completers 2019	Annual Openings	Gap Between Demand and Provision	% Jobs Growth (2019-2022)
Agriculture	389	946	557	-1%
Animal Care and Veterinary Science	561	150	-411	-0%
Horticulture and Forestry	547	261	-286	-2%

Green: Areas where the provider base already offers courses, but the data indicates that there may be room to grow these to meet employment demand.

Blue: Courses the provider base does not currently offer, indicating that there is potential for creating new courses to meet these skills needs.

Yellow: Areas where the data suggests that the provider base is currently oversupplying the labour market to a significant level.

Skills provision that is aligned to local jobs and industry demand not only helps providers with their Ofsted inspection but also helps to ensure learners are best placed to get employment using the skills they have learned, supply employers with the skills they need and support growth in the local and wider economy.

This provision review identifies areas of misalignment in the Marches for the agri-tech sector:

Strengths (course areas that are well met compared to industry demand)

Course areas which have a gap between supply and demand, where that there is less provision than supply is possibly where there is still potential to increase provision locally. These include the disciplines highlighted green in the table, e.g. agriculture.

Disciplines in the green section of the table that also have a net positive change in jobs in the next few years are seen as extra strengths to the area; however, no courses are applicable in this analysis.

Opportunities (course areas that are currently under supplied compared to demand)

Other opportunity areas include those highlighted in blue with a gap between provision and demand, as these are the disciplines which are sought after but have no provision locally. There is room for courses to be developed in these disciplines to meet local employer needs, but there are no courses applicable in this analysis.

Threats (course areas that are well met or oversupplied compared to industry demand)

Disciplines with too much provision and not enough employer demand will lead to an oversaturated supply of labour in certain disciplines. Graduates from these courses will find it difficult to find employment locally and may have to move out of the area to find work in their field. People skilled in this discipline might have to upskill or retain in other disciplines to find work elsewhere. Courses in this group include those highlighted in yellow e.g. animal care and veterinary science and horticulture and forestry.

The best way to implement change is to prioritise interventions based on biggest misalignments and gaps. Disciplines with a low uptake e.g. those in blue, need extra resources to highlight the opportunities in these occupations. **These strengths, opportunities and threats can be clearly identified in the graph below.**

Openings vs Completers
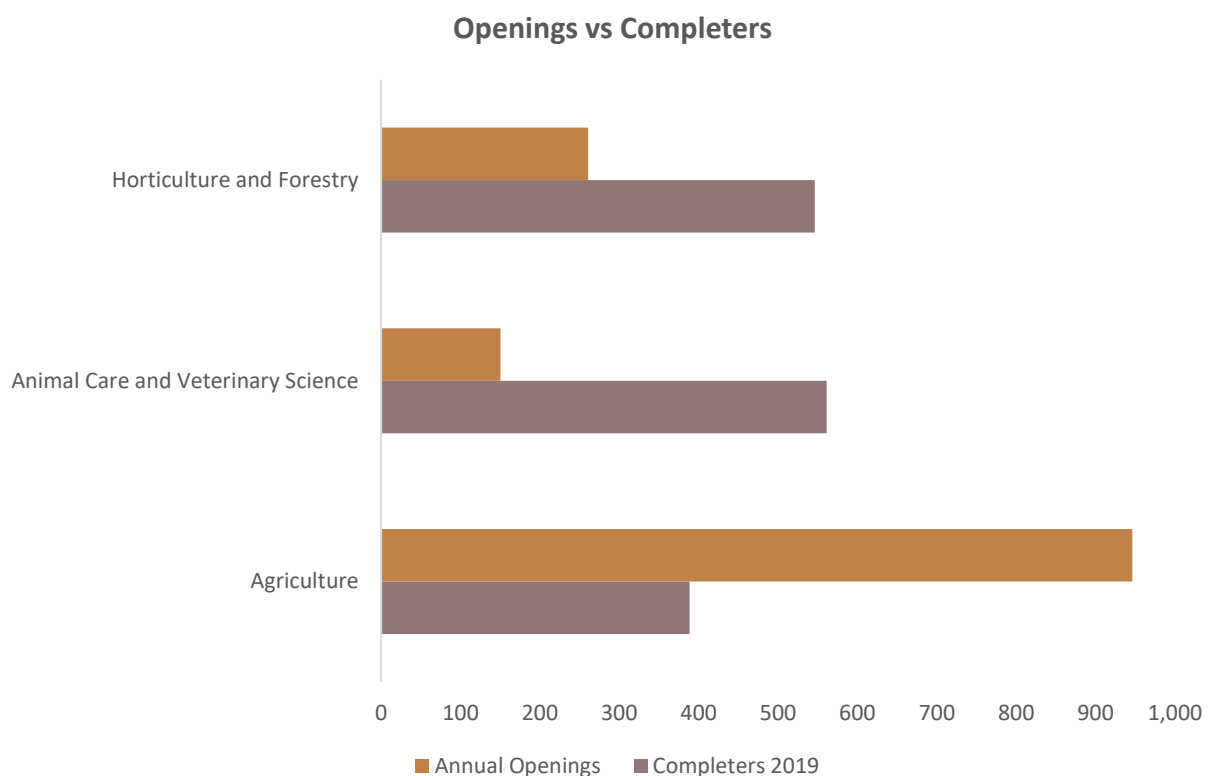
Source: EMSI Analytics Tool, 2020

4.2 Future Drivers of Skills

Agri-tech is an industry in transformation because of issues such as climate change, advances in technology and new public expectations. It needs, therefore, to have a workforce fit for the future and focused on the right priorities.

There is a strong feeling among industry leaders and employers that the sector needs to go beyond the traditional pool of people it draws from and open itself up to more from outside of agriculture.

Employers are conscious that the development and subsequent rollout of new cutting-edge technology like artificial intelligence, gene-editing and robotics, along with new concepts such as vertical farming require people with a whole new range of skills, such as engineers, chemists, geneticists and data analysts.

These new technologies are being developed to help agri-tech businesses become more efficient and environmentally sustainable. The farming industry has been castigated in recent months for the role that livestock plays in greenhouse emissions, and farm leaders have agreed that it needs to become net zero in terms of emissions by 2040.

But if agriculture is to be part of the solution to this global problem, it will require people capable of some smart thinking about how production systems can evolve, so they are more sustainable environmentally. It will also require people on the ground with the practical skills and enthusiasm to turn that theory into reality.

4.3 Impact of Brexit

There is little doubt that the UK agri-tech sector will be one of the sectors most seriously affected by Brexit. Not only is it dependent on trade relations with the European Union (EU), but it is also a sector dependent on migrant labour and is heavily subsidised and regulated under the present Common Agricultural Policy (CAP). The government response has been to try and reassure the sector, guaranteeing UK farmers the same level of subsidy (as under the CAP) until the end of 2022. However, until the country leaves the EU the economic and social implications of Brexit remain open to debate.

The findings of the recent Marches Growth Hub: Brexit Preparation Report, which surveyed 80 businesses from the agritech sector suggests that they have not prepared for Brexit as much as in other sectors. Less than half of the 80 agritech businesses have considered the potential impact of a change in the UK / EU trade relationship on suppliers and customers (41.3%). Overall, there was a mixture of businesses who felt they would be hit hard by Brexit, and others who felt they wouldn't be affected – of which the latter were often small family run businesses.

4.4 Impact of Covid-19

Covid-19 is having and will continue to have an impact on all business sectors. Digital technology has helped businesses continue to operate by enabling virtual working and addressing skills issues through online tools and training opportunities where appropriate. Predicting how that might impact on businesses in the future is difficult but methods of doing business will change and in some cases that might alter the requirements on digital technology and change skills and training requirements.

Covid-19's impact on global supply chains may encourage some businesses to consider diversification and/or automation which could provide opportunities for the opportunities for the agri-tech sector.

5 Conclusions

5.1 Summary

As a major contributor to the Marches economy the agri-tech sector needs to rise to the well documented and broadly recognised challenges it has in attracting the skills needed in the future. This has been a sector based on traditional skills, systems and working practices. Yet, there is strong evidence that new inventions and techniques are being willingly embraced. Not least as agri-tech enterprises large and small can use emerging technology to do things faster, better and with less waste.

The education institutes are a key strength for the Marches region in this sector. Whilst employers are increasingly reporting they are struggling to find enough suitable candidates for specialist, skilled roles, the solution for some might be to spread their net more widely than they have in the past. This is best done in collaboration with FE and HE institutions to minimise areas of misalignment in skills provision and to understand the need of agri-tech businesses.

5.2 Recommendations

Co-ordinate Sector Careers Promotion: In order to address skill shortages in agri-tech, the sector should be promoted within schools as a career option. Particular focus should be on the breadth of opportunities in agri-tech – science, business and finance, engineering, trades, environmental management, ICT, agriculture, animal husbandry, etc.

Develop a Workforce Development Programme to Equip the Sector with the Skills Needed for Growth: The existing Agri-tech workforce faces unprecedented challenges through the adoption of new technology, pressures to raise labour productivity and to fill gaps in the workforce left by a fall in migration. Industry growth needs a focus on skills for the existing workforce as well as attracting new entrants.

Promote Collaboration between Businesses and Education Providers: The network of FE and HE institutions is a key asset of the Marches for this sector. Given the sector specialisms of these institutions, they are well placed to build partnerships with agri-tech businesses to understand the skills requirements of the new wave of technology and engage in new innovative techniques.

5.3 Action Planning

It will be the responsibility of the Marches Local Enterprise Partnership (LEP) and its key stakeholders to review the recommendations, develop a strategy and agree an action plan to address the challenges and opportunities identified within this report.